WHAT IS CLAIMED IS:

1. A low temperature rendering process for converting animal trimmings to meat product, said low temperature rendering process comprising steps of:

(a) providing animal trimmings having an average size of between about 0.25 lbs and about 12 lbs;

(b) surface treating said animal trimmings with a heat transfer fluid provided at a temperature of between about 80°C and about 150°C for between about 25 seconds and about 150 seconds to provide surface treated animal trimmings;

(c) heating said surface treated animal trimmings in a heat exchanger having a first–in and first–out arrangement to a temperature in the range of about 30°C to about 50°C to form a heated slurry;

(d) separating a solids stream and a liquids stream from the heated slurry, the solids stream containing an increased weight percent of protein and moisture compared with the weight percent of protein and moisture in the heated slurry;

(e) separating a heavy phase and a light phase from the liquids stream, the heavy phase containing an increased weight percent of moisture and water soluble protein compared with the weight percent of moisture and water soluble proteins in the heated liquids stream; and

(f) combining the solids stream and the heavy phase to form a meat product.

2. A low temperature rendering process according to claim 1, wherein said step of separating a solids stream and a liquids stream from the heated slurry is provided by a decanter.

3. A low temperature rendering process according to claim 1, wherein said step of separating a heavy phase and a light phase from the liquids stream is provided by a centrifuge.

4. A low temperature rendering process according to claim 1, wherein said meat product has a fat content of less than about 30%; a protein content of greater than about

14%; and a protein efficiency ratio of about 2.5 or higher, or an essential amino acid content of at least 33% of the total amino acids.

5. A low temperature rendering process according to claim 1, wherein said meat product has an essential amino acids content of at least 33% of the total amino acids.

6. A low temperature rendering process according to claim 1, wherein the desinewed animal trimmings are not heated above 45°C in the heat exchanger.

7. A low temperature rendering process according to claim 1, wherein the meat product is frozen within about 30 minutes of said step of heating desinewed animal trimmings in a heat exchanger.

8. A low temperature rendering process according to claim 1, wherein the meat product is finely textured meat.

9. A low temperature rendering process according to claim 1, wherein the animal trimmings has a lean content of at least 37%, by weight.

10. A low temperature rendering process according to claim 1, wherein the animal trimmings has a lean content of at least 39%, by weight.

11. A low temperature rendering process according to claim 1, wherein the heat transfer fluid comprises water.

12. A low temperature rendering process according to claim 11, wherein the water is provided at a temperature of between about 80°C and about 110°C.

13. A low temperature rendering process according to claim 1, wherein the heat transfer fluid comprises tallow.

14. A low temperature rendering process according to claim 13, wherein the tallow is provided at a temperature of between about 115°C and about 150°C .

15. A meat product prepared according to the process of claim 1.

16. A low temperature rendering process for converting animal trimmings to meat product, said low temperature rendering process comprising steps of:

(a) surface treating animal trimmings with a transfer fluid provided at a temperature between about 80°C and about 150°C for between about 25 seconds and about 150 seconds to provide surface treated animal trimmings;

(b) heating said surface treated animal trimmings in a heat exchanger having a first-in and first-out arrangement to a temperature in the range of about 30°C to about 50°C to form a heated slurry; and

(c) feeding the heated slurry to a decanter and separating the heated slurry into a solids stream and a liquids stream, the solids stream containing an increased weight-percent of protein and moisture compared with the weight-percent of protein and moisture in the heated slurry, and the liquids stream containing an increased weight-percent of tallow, water-soluble proteins, and moisture compared with the weight-percent of tallow, water-soluble proteins, and moisture in said heated slurry.

17. A low temperature rendering process according to claim 16, further comprising step of:

(a) feeding the liquids stream from the decanter to a separator and separating the liquids stream into a heavy phase and a light phase, the heavy phase containing an increased weight-percent of moisture and water-soluble proteins compared to the weight-percent of moisture and water-soluble proteins in the liquids stream, and the light phase containing an increased weight-percent of tallow compared with the weight-percent of tallow in the liquids stream.

18. A low temperature rendering process according to claim 17, further comprising a step of combining the solids stream and the heavy phase to provide a meat product.

19. A low temperature rendering process according to claim 16, wherein the heat transfer fluid comprises water.

20. A low temperature rendering process according to claim 16, wherein the heat transfer fluid comprises tallow.